

1 60  
MSGAVLVAIAA AVGNLLQGW DNATIAGAVLYIKKEFNLESNPSVEGLIVAMSLIGATLIT  
MGGAVMVAIAA SIGNLLQGW DNATIAGAVLYIKKEFNLQSEPLIEGLIVAMFLIGATVIT  
MAGAVLVAIAA SIGNLLQGW DNATIAGAVLYIKKEFNLHSDPLIEGLIVAM-----  
-----  
MKGAVLVAIAA SIGNFLQGW DNATIAGANGYIKKDLALGTT--MERLVVGMSLIGATVIT  
-----  
MSGAALVAIAA SIGNLLQGW DNATIAGAVLYIKKEFQLENPTVEGLIVA-----  
-----  
-----

61 120  
TCsggvadwlgrprmlilssilyFVGS LVM LSPNVVYLLGRLLdggfvgvlvvtlvpiy  
TSpqpradcvgrrpmlvasAVLYFVSG LVM LWA PIVYI LLLARLLdggfvglavtlvp ly  
-----  
-----  
tcsgpiadwlgrprmmiissvlyflgglvmlwspnvvyvclarlldggfvglavtlvpvy  
-----  
-----  
-----  
-----  
-----  
-----

121 180  
isetapp-eirGLLNTLPQFTG-SGGMF LSYCMVFGMSLMPSPSWRLMLGVLFIPSLVFF  
isetaphrxswGXXNTLPQFIGVXGGMF LSYCMVFGMSLMPKPDWRLMLGVLSIPSLXYF  
-----S-----LI-----GAT-----I-----  
-----  
isetaps-eirGSLNTLPQFSG-SGGMF LSYCMVFGMSLSPAPSWRLMLGVLSIPSLLYF  
-----  
-----  
-----  
-----  
-----  
-----

FIG. 1A

181 240  
SEQ ID NO:29 (gi 3080420) FLTVFFLPESPRWLVSCKRMLEAKRVLQRLRGREDVSGEMALLVEGLGIGGETTIEEYII  
SEQ ID NO:2 GLTVFYLPESPRWLVSCKRMLEAKRVLQRLRGREDVSGEMALLVEGLGIGGETTIEEYII  
SEQ ID NO:4 -----IT-----TXS-----  
SEQ ID NO:6 -----  
SEQ ID NO:8 ALTIFFLPESPRWLVSCKRMLEAKRVLQRLRGREDVSGEMALLVEGLGIGGETTIEEYII  
SEQ ID NO:10 -----  
SEQ ID NO:12 -----  
SEQ ID NO:14 -----  
SEQ ID NO:16 -----

241 300  
SEQ ID NO:29 (gi 3080420) GPADEVTDHDDIAVDKD-QIKLYGAEGLSWVARPVKG-----GSTMSVLSRHGSTMSRRQ  
SEQ ID NO:2 GPATEAADDLVTDGDKE-QITLYGPEEGQSWIARPSKGPIMGLSVLSLASHHGS-MVNQS  
SEQ ID NO:4 -----  
SEQ ID NO:6 -----  
SEQ ID NO:8 GPADDVADGHEHATEKD-KIRLYGQAGLSWLSKPVTGQ-----SSIGLASHHGS-IINQS  
SEQ ID NO:10 -----DPSREKD-QIKLYGPEEGQSWVARPVAGP-----NSVGLVSRKGS-MANPS  
SEQ ID NO:12 -----  
SEQ ID NO:14 -----S-----  
SEQ ID NO:16 -----

301 360  
SEQ ID NO:29 (gi 3080420) GSLIDPLVTLEGSVHEKMPDTG---SMRSALFPHEGSMFVSVDGN---QPRHEDWD---EEN  
SEQ ID NO:2 VPLMDPIVTLEGSVHENMPQAG---GSMRSTLFPNFGSMFVSVDQ---HAKNEQWD---EEN  
SEQ ID NO:4 -----  
SEQ ID NO:6 -----  
SEQ ID NO:8 MPLMDPLVTLEGSVHEKLPETGARGSMRSTLFPNFGSMFSTAE---PHAKIEQWD---EES  
SEQ ID NO:10 -SLVDPLVTLEGSVHEKLPETG-----STLFPHEGSMFVSVDG---NQPRNEDWD---EES  
SEQ ID NO:12 -----  
SEQ ID NO:14 -----WK-----E-----  
SEQ ID NO:16 -----

FIG. 1B

361 420  
 SEQ ID NO:29 (gi 3080420) LVGEGEDYPSD---HGDDSEDDLHSP LISRQTTSME-KDMPHTAH--GTLSTFRHGSQV  
 SEQ ID NO:2 LHRDDEEYASD---GAGGDYEDNLHSP LLSRQATGAEGKDIVHHGHRGSAISMRRQS--L  
 SEQ ID NO:4 -----  
 SEQ ID NO:6 -----  
 SEQ ID NO:8 LQREDEDYMSDATRG---DSDDNLHSP LISRQTTSLE-KDLPPPPSHGSI LGSMMRRHSSI  
 SEQ ID NO:10 LAREGDDYVSDA--G---DSDDNLQSP LISRQTTS LD-KDIPPHAH--SNLASMRQGSLL  
 SEQ ID NO:12 -----  
 SEQ ID NO:14 -----  
 SEQ ID NO:16 -----

421 480  
 SEQ ID NO:29 (gi 3080420) QGAQGEAGSMGIGGWQVAVKWTREDESGQKEEGF-----PGSRRGSI VSLPG  
 SEQ ID NO:2 LGEGGDGVSSTDIGGWQLAWKWSEKEGNGRKEGFKRVYLHQEGVPGSRRGSI VSLPG  
 SEQ ID NO:4 -----  
 SEQ ID NO:6 -----  
 SEQ ID NO:8 MQSGEQGGSTGIGGWQLAWKWTDK-GEDGKQGGFKRIY LHEEGVSASRRGSI VSI PG  
 SEQ ID NO:10 HGNSGEPTGSTGIGGWQLAWKWSEREGPDGKKEGFKRIY LHQDGGSGRRGSI VVSLPG  
 SEQ ID NO:12 -----  
 SEQ ID NO:14 ---GGEAVSSTGIGGWQLAWKWSE RQGEDGKKEGFKRIY LHQEGVADSRGSI VVSLPG  
 SEQ ID NO:16 -----

481 540  
 SEQ ID NO:29 (gi 3080420) GDGTGEA--DFVQASALVSQPALYSKDLLKEHT-IGPAMVHPSE-TTKGSI WHDLHDPGV  
 SEQ ID NO:2 GGDVLEGS-EFVHAAALVSQALFSKGLAEPRM-SDAAMVHPSEVAAGSRWKDLFEPPGV  
 SEQ ID NO:4 -----  
 SEQ ID NO:6 -----  
 SEQ ID NO:8 EG-----EFVQAAALVSQPALYSKELIDGH-PVGPAMVHPSETASKGPSWKALLEPPGV  
 SEQ ID NO:10 GDLPTD--SEVVQAAALVSQPALYNEDLMRQR-PVGPAMIHPSETIAKGPSWSDLFEPPGV  
 SEQ ID NO:12 -----  
 SEQ ID NO:14 GG DATQGGSGFIHAAALVSHSALYSKDLMEERMAAGPAMIHPLEAAPKSIWKDLFEPPGV  
 SEQ ID NO:16 -----EPGV

FIG. 1C

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541                                600
SEQ ID NO:29 (gi 3080420) KRALVVGVLQILQQFSGINGVLYYTPQILEQAGVGILLNMGISSSSASLLISALTTFV
SEQ ID NO:2 RRALLVGVGIQILQQFAGINGVLYYTPQILEQAGVAVILSKFGLSSASASILISSLTTL,
SEQ ID NO:4 -----
SEQ ID NO:6 -----VL-----
SEQ ID NO:8 KHALVVGVIQILQQFSGINGVLYYTPQILEEAGVEVLLSDIGIGSESASF,
SEQ ID NO:10 KHALIVGVGMQILQQFSGINGVLYYTPQILEQAGVGYLLSSLGLGSTSSSEF,
SEQ ID NO:12 -----
SEQ ID NO:14 RRALEFVGVIQMLQQFAGINGVLYYTPQILEQAGVAVLLSNLGLSSASASILISSLTTL,
SEQ ID NO:16 KHALFVGIGLQILQQFAGINGVLYYTPQILEQAGVGVLNIGLSSSSASILISALTTL,

601                                660
SEQ ID NO:29 (gi 3080420) MLPAIAVAMRLMDLSGRRLLLTIPILIASLLVLVISNLVHMNSIVHAVLSTVSVVI,YF
SEQ ID NO:2 MLPCIGFAMLLMDLSGRRFLLLTIPILIASLVILVSNLIDLGLTAHALLSTISVIVYF
SEQ ID NO:4 -----
SEQ ID NO:6 -----TLILVNILDVGTMVHASLSTVSVILYF
SEQ ID NO:8 MLPCIGVAMKLMDSGRRQLLTIPVLIVSLIILVIGSLVNEGNVAHAAISTVCVVVYF
SEQ ID NO:10 MLPCIAIAMRLMDISGRRLLLTIPVLIAALLILVLGSLVDLGSANASISTISVIVYF
SEQ ID NO:12 -----
SEQ ID NO:14 MLPSIGVAMRLMDISGRRFLLLTIPILIASLIVLGVNVNINLSTVPHAVLSTVSVIVYF
SEQ ID NO:16 MLPSIGIAMRLMDMSGRRFLLLTIPVLIVALAVLVNVLVDVGTMVHAAISTISVIVYF

661                                720
SEQ ID NO:29 (gi 3080420) CFFVMGEGPAPNILCSEIEFTRVRGICIAICALTFWICDIIIVTYSPLPVLKSIGLAGVFG
SEQ ID NO:2 CCFVMGEGPIPNILCAEIEFTRVRGLCIACAFTWIGDIIIVTYSPLPMLNAIGLAGVFS
SEQ ID NO:4 -----
SEQ ID NO:6 CFFVMGEGPIPNILCAEIEFTRVRGICIAICALTFWIGDIIIVTYTLPVMLNAIGLAGVFG
SEQ ID NO:8 CCFVMGYGPIPNILCSEIEFTRVRGLCIAICALVFWIGDIIIVTYSPLPMLGSLGIGGVEA
SEQ ID NO:10 CFFVMGEGPIPNILCAEIEFTRVRGLCIAICALTFWICDIIIVTYTLPVMLNSVGLAGVFG
SEQ ID NO:12 -----
SEQ ID NO:14 CCFVMGEGPIPNILCAEIEFTRVRGVCIACALTFWICDIIIVTYSPLPMLNAIGLAGVFG
SEQ ID NO:16 CFFVMGEGPIPNILCAEIEFTSVRGICIAICALTFWIGDIIIVTYTLPVMLNAIGLAGVFG

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FIG. 1D

SEQ ID NO: 29	(gi 3080420)	721	767
SEQ ID NO: 2		MYAIVCCISWVFVFIKVPETKGMPL	EVITEFFSVGARQAEAA--KNE
SEQ ID NO: 4		IYAVVCLISFVFVFLKVPETKGMPL	EVITEFFAVGAKQAAA-----KA
SEQ ID NO: 6		IYAVVCILAFLEVFVFMKVPETKGMPL	EVITEFFSVGAKQ-AKE-----D
SEQ ID NO: 8		IYAVVCFISWIFVFLKVPETKGMPL	EVISEFFSVGAKQAASA--KNE
SEQ ID NO: 10		IYAVVCFIAWVFVFLKVPETKGMPL	EVIEFFSVGAKQFDDA--KHN
SEQ ID NO: 12			
SEQ ID NO: 14		IYAVVCCIAFVFVYLKVPETKGMPL	EVITEFFAVGAKQ-AQA--TIA
SEQ ID NO: 16		IYAIVCVLAFFVFVYMKVPETKGMPL	EVITEFFSVGAKQ-GKE--ATD

FIG. 1E

1 MSEG-----TNKAMSDPPPTTASKVIA--DF-DPLKKPPKRN---KFAFACAT 60  
SR-----AQSEPSTMASA--PL--PAAIEPGKKGNVKFAFACXI  
M-----ASD--ELAK--AVEPRKKGNVKYASICAI  
-----MASA--AL--PEAVAPKKKKGNVRFACACAI  
MTEG-----KLVEAAEAH-----KTLQ--DF-DPPKKR-KRN---KYAFACAM  
-----MDRA--AL--PAAVEPKKKGNVRFACACAI  
MKMS-----PERKGAEDKEEGSRMASA--ALPEPGAVHPRNKGNFKYAFTCAL

SEQ ID NO: 30  
SEQ ID NO: 18  
SEQ ID NO: 20  
SEQ ID NO: 22  
SEQ ID NO: 24  
SEQ ID NO: 26  
SEQ ID NO: 28

61 LASMTSVLLGY-----DIGVMSGAI IYLKEDWHISDTQIGVLVG 120  
LASMTSILLGY-----DIGVMSGASLYIKKDLKISDVKLEILMG  
LASMASVILGY-----DIGVMSGAAAMYIKKDLNITDVQLEILIG  
LASMTSILLGY-----DIGVMSGASLYIKKDEFNISDGKVEVILMG  
LASMTSILLGY-----DIGVMSGAAIYIKRDLKVSDEQIEILLG  
LASMTSILLGY-----DIGVMSGASLYIQKDLKINDTQLEVLMG  
CASMATIVILGY-----DVGVMMSGASLYIKRDLQITDVQLEIMMG

SEQ ID NO: 30  
SEQ ID NO: 18  
SEQ ID NO: 20  
SEQ ID NO: 22  
SEQ ID NO: 24  
SEQ ID NO: 26  
SEQ ID NO: 28

121 ILNIYCLFGSFAAGRTSDWIGRRYTI VLAGAIEFFVGALLMGFATNYAFLMVGRFVTGIGV 180  
ILNVYSLIGSXAAGRTSDWIGRRXTIVFAAVIEFFAGAXLMGFVAVNYWMLMEGRFVAGIGV  
ILSLYSLFGSFAAGRTSDRIGRRRLTVFAAVIEFFVGSLLMGFAVNYGMLMAGRFVAGVGV  
ILNLVSLIGSFAAGRTSDWIGRRYTI VFAAVIEFFAGXFLMGFAVNYAMLMEGRFVAGIGV  
IINLYSLIGSCLAGRTSDWIGPRYTI VFAGTIEFFVGALLMGFSPNYSFLMEGRFVAGIGI  
ILNVYSLIGSFAAGRTSDWIGRRFTIVFAAVIEFFAGALIMGFSVNYAMLMEGRFVAGIGV  
ILSVYALIGSFLGARTSDWVGRRVTVFAAAIEFNNGSLLMGFAVNYAML MVGRFVTGIGV

SEQ ID NO: 30  
SEQ ID NO: 18  
SEQ ID NO: 20  
SEQ ID NO: 22  
SEQ ID NO: 24  
SEQ ID NO: 26  
SEQ ID NO: 28

FIG. 2A



SEQ	ID	NO:	30	181	240
SEQ	ID	NO:	18		
SEQ	ID	NO:	20		
SEQ	ID	NO:	22		
SEQ	ID	NO:	24		
SEQ	ID	NO:	26		
SEQ	ID	NO:	28		
SEQ	ID	NO:	30	241	300
SEQ	ID	NO:	18		
SEQ	ID	NO:	20		
SEQ	ID	NO:	22		
SEQ	ID	NO:	24		
SEQ	ID	NO:	26		
SEQ	ID	NO:	28		
SEQ	ID	NO:	30	301	360
SEQ	ID	NO:	18		
SEQ	ID	NO:	20		
SEQ	ID	NO:	22		
SEQ	ID	NO:	24		
SEQ	ID	NO:	26		
SEQ	ID	NO:	28		

FIG. 2B

SEQ ID NO: 30	361	RIFQSAGITNARKQLLATVAVGVVKTLEILVATFQLDKYGRRPLLLTSVGGMI IAILTLA	420
SEQ ID NO: 18		-----	
SEQ ID NO: 20		RLFKSAGITDDNKL LGVTCAVGVTKTFFILVATFLLDRAGRPLLLISTGGMIVSLICIG	
SEQ ID NO: 22		LVFKSPGLTNDKHFELGTTWPFQVTKRLEILLATFFIDGVGRRPLLLGSTGGI ILSLIGLG	
SEQ ID NO: 24		RIFEKAGITNDTHKLLATVAVGVKTVFILAATFTLDRVGRRPLLLSSVGGMVLSLLTLA	
SEQ ID NO: 26		LVFKSAGITGDSRLRGTTVAVGATNTVEILVATFLLDRIRRRPLVLTSTGGMLVSLVGLA	
SEQ ID NO: 28		RVFQSAGITGDNHLLGATCAMGMKTLFILLVATFQLDRVGRRPLLLTSTAGMLACLIGLG	
SEQ ID NO: 30	421	MSLTVID-HSHHKITWAIALCITMVCAVASESIGLGPI TWVYSSEVFLRLRAQGTSMG	480
SEQ ID NO: 18		-----	
SEQ ID NO: 20		SGLTVAGHHPDTKVAWAVALCIASLTSYIAFFSIGLGPI TGVTSEIFPLQVRALGEAVG	
SEQ ID NO: 22		AGLTVVGQHPDAKIPWAIGLSIASLTAYVAFFSIGLGPI TWVYSSEIFPLQVRALGCSLG	
SEQ ID NO: 24		ISLTVID-HSERKLMWAVGSSIAMVLAYVATFSIGAGPI TWVYSSEIFPLRLRAQGAAG	
SEQ ID NO: 26		TGLTVISRHPDEKITWAIIVLCIFCIMAYVAFFSIGLGPI TWVYSSEIFPLHVRALGCSLG	
SEQ ID NO: 28		TGLTVVGRHPDAKVPWAIGLCIVSILAYVSFFSIGLGPLTSVYTSEVFP LRVRALGFALG	
SEQ ID NO: 30	481	VAVNRVSVGVISIFELPLSHKITTGGAFFLFGGIAI IAWFFELTFLPETRGRITLNMHEL	540
SEQ ID NO: 18		-----	
SEQ ID NO: 20		VASNRVTSAVISMTFLSLSKAITIGGSFFLYSGIAAVAVWFFETCLPETRGRITLEEMGKL	
SEQ ID NO: 22		VANRVTSGVISMTFLSLSKAITIGGSFFLYSGIAALAWVFFYTYLPETRGRITLEEMSKL	
SEQ ID NO: 24		VAVNRRTSAVVSMTFLSLTRAITIGGAFFLYCGIATVGWIFFYTVLPETRGRITLEDMEGS	
SEQ ID NO: 26		VAVNRLTSGVISMTFISLSKAMTIGGAFFLFGAGIASFAWVFFFAFAYLPETRGRITLEDMSL	
SEQ ID NO: 28		TSCNRVTSAAVSMTFLSLSKAITIGGSFFLYAGIAAIGWIFFFTFIPETRGLPLEEIGKL	

FIG. 2C



541  
FEDFRWRESEFPGNKSNNNDENSTRKQSNNGNDKSQVQLGETTTSTTVTNDNH  
-----TS-----  
FGM-----PDTGMAEEAEDA-AAKEKVVELPSSK-----  
FGD-----TAAASESEDEPAKEK---KKVEMAATN-----  
FGTFRSKSN--ASKAVENENG-----QVAQVQLG-----TNVQT  
FGN-----TATHKQGAEEADDDAGEKKVEMAATN-----  
FGM-----TDTAVEAQDTAT-KDKAKVGEM--N-----

SEQ ID NO:30  
SEQ ID NO:18  
SEQ ID NO:20  
SEQ ID NO:22  
SEQ ID NO:24  
SEQ ID NO:26  
SEQ ID NO:28

FIG. 2D